(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 11 November 2004 (11.11.2004)

PCT

(10) International Publication Number $WO\ 2004/095919\ A2$

(51) International Patent Classification7: A01M 1/14, 1/24

(21) International Application Number:

PCT/GB2004/001757

(22) International Filing Date: 26 April 2004 (26.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 0309572.6 26 April 2003 (26.04.2003) GB

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

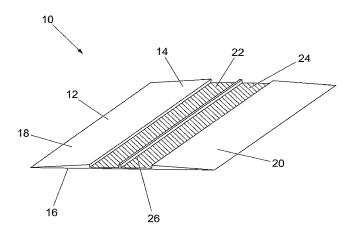
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: INSECT AND ARACHNID TRAP



(57) **Abstract:** An insect and arachnid trap (10,100) comprises a substrate (12) having a top surface (14) onto which a sticky substance (24) is deposited. One embodiment of the trap (10) is provided with a reinforcing rib (26) to reinforce the thin sheet substrate. The trap (10, 100) may also have a channel (22, 22°) into which the sticky substance (24) is deposited. The top surface (14) may have a smooth finish and be inclined to the horizontal in order to prevent trapped insects and arachnids from extricating themselves from the sticky substance. The sticky substance is a composition which includes polybutene oil and polyisobutylene. The sticky substance preferably includes 5-15 wt % polyisobutylene. This sticky substance in combination with the channel and smooth top surface provides an insect and arachnid trap which is more effective than known examples. The reinforcing rib ensures that the substrate (12) does not fold back upon itself when handled after use. Contact with trapped insects or arachnids is thus avoided.



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Insect and Arachnid Trap

1 The present invention relates to an apparatus for trapping insects, arachnids and similar arthropods. 2 3 Traditional arrangements for trapping insects 4 consist of thin, flexible strips or coils of paper 5 or plastic coated with a sticky film. They are 6 7 normally suspended from ceilings or else adhered to a window pane. Although such arrangements are 8 reasonably effective at trapping flying insects, 9 they are not particularly effective at trapping 10 arachnids. This is due to arachnids being able to 11 12 remove themselves from the sticky film using their free legs to connect with an adjacent surface and 13 14 pull themselves free. A further disadvantage with the aforementioned arrangements is that although the 15 sticky films can trap insects, they are not 16 17 sufficiently adhesive to successfully trap 18 arachnids. Many species of arachnid secrete a type of oil through their feet in order to avoid sticking 19 to their own webs. As a result, they can also use 20 21 these secretions to avoid adhering to the films in

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1 traditional insect traps. Furthermore, flypaper 2 often has the undesirable effect of sticking itself to people or objects, for example, when stood upon 3 by a person. Finally, flypapers and similar traps are conventionally thin sheets of paper or plastic. 5 As a result, they have very little rigidity and can 6 fold back on themselves when a used trap is being 7 disposed of. This can be an unpleasant experience 8 9 for someone who has a fear of insects or arachnids, as they do not wish to come into contact with the 10 insects or arachnids, even when they have been 11 successfully trapped. 12 13 It is an object of the present invention to provide 14 an insect and arachnid trap that obviates or 15 16 · mitigates one or more of the disadvantages referred 17 to above. 18 According to a first aspect of the present 19 20 invention, there is provided an insect and arachnid 21 trap comprising a substrate having a top surface and 22 a bottom surface, wherein at least a portion of the top surface has a sticky substance applied thereto, 23 24 and wherein the substrate has at least one reinforcement rib. 25 26 Preferably, the substrate is formed from a plastics 27 28 material and the at least one rib is integrally formed with the substrate. 29 30 Preferably, the substrate is an elongate sheet 31 having a longitudinal axis, and wherein the at least 32

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1 one rib runs substantially parallel to the 2 longitudinal axis. 3 Preferably, the substrate further includes a channel 4 formed in the top surface, and the sticky substance 5 is located in the channel. 6 7 Preferably, the at least one rib is located in the 8 9 channel. 10 Preferably, the channel is broader at its base than 11 12 at its top. Preferably, the channel has a depth of between 1.5 and 2mm. 13 14 According to a second aspect of the present 15 16 invention, there is provided an insect and arachnid 17 trap comprising a substrate having a top surface and a bottom surface, wherein the substrate has at least 18 one channel formed in the top surface, and wherein 19 at least a portion of the channel contains a sticky 20 substance. 21 22 23 Preferably, the substrate is an elongate sheet 24 having a longitudinal axis, and wherein the channel 25 runs substantially parallel to the longitudinal 26 axis. 27 28 Preferably, the trap further comprises at least one reinforcing rib located in the channel. Preferably, 29 30 the rib is integrally formed with the substrate. 31 Preferably, the reinforcing rib runs parallel with

the channel.

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2	Preferably, at least a portion of the top surface of
3	the substrate inclines upwardly from an edge of the
4	substrate to the channel. In a preferred
5	embodiment, the channel substantially bisects the
6	top surface of the substrate such that the top
7	surface has first and second top surface portions,
8	each of the top surface portions inclined upwardly
9	from an edge of the substrate to the channel.
10	
11	Preferably, the channel is broader at its base than
12	at its top. Preferably, the channel has a depth of
13	between 1.5 and 2mm.
14	
15	Preferably, the substrate is substantially
16	transparent.
17	
18	Preferably, the top surface is provided with a
19	substantially smooth finish.
20	
21	Preferably, the sticky substance is a composition
22	including polybutene oil and polyisobutylene. Most
23	preferably, the sticky substance includes between 5
24	and 15 wt % polyisobutylene.
25	
26	In a preferred embodiment the sticky substance is
27	applied to the substrate in strips. Alternatively,
28	the sticky substance is applied to the substrate in
29	fluid form.
30	

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Preferably, at least a portion of the bottom surface 1 2 is coated with an adhesive adapted to secure the trap to a surface. 3 4 Preferably, the trap further comprises mechanical 5 6 fixing means adapted to fix the trap to an adjacent 7 trap. The mechanical fixing means comprises a male fixing element at a first end of the substrate and a 8 9 female fixing element at a second end of the 10 substrate. The mechanical fixing means is adapted 11 to permit adjacent traps to be folded on top of one 12 another. 13 14 Embodiments of the present invention will now be 15 described, by way of example only, with reference to 16 the accompanying drawings, in which: -17 Fig. 1 is a perspective view of an insect trap 18 19 in accordance with the present invention; 20 21 Fig. 2 is a top view of the insect trap of Fig. 22 1; 23 Figs. 3(a) and 3(b) show examples of the 24 25 applications of the insect trap of Fig. 1; 26 Fig. 4 is a perspective view of a second 27 28 embodiment of an insect trap in accordance with the 29 present invention; and 30 31 Fig. 5 is a side view of the insect trap of 32 Fig. 4.

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1 2 Referring to Figs. 1 and 2, an insect trap 10 comprises an elongate substrate, or body portion, 12 3 having a top surface 14 and a bottom surface 16. 4 5 6 The top surface 14 comprises two top surface portions 18, 20 which incline upwardly in a lateral 7 direction from the longitudinal edges of the body 8 9 portion 12 towards the centre of the body portion The top surface portions 18,20 are separated 10 11 from one another by a channel 22, which runs longitudinally along the body portion 12. The top 12 13 surface portions 18,20 incline in opposing directions, as can be seen in Fig. 1. 14 surface portions 18, 20 are also provided with a 15 16 smooth finish to prevent insects from removing 17 themselves from the trap 10, as will be explained below. 18 19 20 The channel 22 is substantially U-shaped in cross-21 section and contains a sticky substance 24. 22 sticky it is meant that the substance 24 is intended to have objects, in this case insects and arachnids, 23 24 adhere or stick thereto. The sticky substance 24 comprises a mixture of polybutene oil and 25 polyisobutylene. In a preferred embodiment, the 26 ideal composition of the sticky substance 24 is 90 27 28 wt % polybutene oil and 10 wt % polyisobutylene. 29 However, tests have shown that the sticky substance 24 is also effective with a composition of 5-15 wt % 30 31 polyisobutylene and the remainder polybutene oil.

The polyisobutylene is added to the polybutene oil

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in order to improve the cohesion, and hence the 1 2 sticking properties, of the material. Without the polyisobutylene, the viscosity of the polybutene oil 3 could be too great or too small to trap insects and 4 arachnids. If the polybutene oil is too viscous, 5 6 the insect or arachnid can walk across the top of the sticky substance. If the polybutene oil is not 7 viscous enough, the insect or arachnid can pull its 8 legs out of the material, and the material will also 9 10 run if the trap is fixed to a non-horizontal surface. By adding the polyisobutylene to the 11 12 material, an ideal viscosity for the material can be 13 achieved. Further ingredients, e.g. wax, may be added to the composition depending on the 14 15 requirements of the application. 16 The channel 22 substantially bisects the top surface 17 It also may have a reinforcement rib, or 18 19 support, 26 which is positioned in the centre of the channel portion 22 and which runs parallel to the 20 21 channel 22. The support 26 prevents any larger unwanted objects coming into contact with the sticky 22 substance 24, for example if a person inadvertently 23 stands on the insect trap 10. The support 26 also 24 provides rigidity to the trap 10 for when the trap 25 is being handled, either before or after use. 26 27 28 The rib 26 is a thin strip that can be either added to the channel portion 22 after manufacture or can 29 30 be integrally formed with the body portion 12 during 31 manufacture. The rib 26 is thick enough to allow a person to stand upon the insect trap 10 and not 32

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break the rib 26, and also thin enough to allow a 1 sufficient area of sticky substance 24 to be applied 2 to the channel portion 22. The sticky substance 24 3 may either be applied in the channel 22 in pre-4 formed strips or else in the form of a liquid or 5 6 paste. 7 The illustrated embodiment has a channel portion 22 8 which has a depth of between 1.5 and 2 mm. 9 10 it should be appreciated that this depth could be greater or less than this amount, depending on the 11 application and the insects/arachnids the trap is 12 13 intended to catch. 14 The bottom surface 16 of the trap 10 is 15 substantially flat, thereby allowing the trap 10 to 16 be placed flush on a surface. The bottom surface 16 17 may include an adhesive material or the like, to 18 allow the insect trap 10 to be removably mounted to 19 surfaces such as floors or walls, as shown in the 20 examples of Figs. 3(a) and 3(b). Fig. 3(a) shows a 21 plurality of traps 10 positioned around the 22 circumference of a window. Fig. 3(b) shows a pair 23 of traps 10 positioned in the corner of a room. 24 25 The preferred material of construction of the insect 26 27 trap 10 is a plastics material which can be moulded into the desired shape. The trap 10 can be moulded 28 in one piece, including the rib 26. Most 29 preferably, the trap is manufactured from a 30 polymeric material, such as polyvinylchloride (PVC) 31 or the like. The trap 10 is also preferably made 32

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1 from a transparent material, in order to minimise 2 the visual impact of the trap. 3 A second embodiment of the trap, generally 4 designated 100, is shown in Figs. 4 and 5. 5 6 features of the trap shared by the first and second 7 embodiments 10,100 are designated with the same reference numerals used in respect of Figs. 1 and 2 8 9 described above. As with the first embodiment, the top surface 14 of the trap 100 also comprises two 10 11 top surface portions 18,20 which incline upwardly in a lateral direction from the longitudinal edges of 12 13 the body portion 12 towards the centre of the body portion 12. The top surface portions 18,20 are 14 separated from one another by a channel 22', which 15 16 runs longitudinally along the body portion 12. 17 top surface portions 18,20 incline in opposing 18 directions, as can be seen in Fig. 4, and are 19 provided with a smooth finish to prevent insects 20 from removing themselves from the trap 10, as will 21 be explained below. 22 The channel 22' has a substantially U-shaped 23 24 profile, but it is broader at its base than at its 25 top, as seen best in Fig. 5. The channel 22' 26 contains an sticky substance 24 which may be laid in 27 strips or else applied as a liquid or paste. 28 channel 22' again substantially bisects the top 29 surface 14. It also may have a rib (not shown) which is positioned in the centre of the channel 22' 30 31 and which runs parallel thereto.

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1 The trap 100 has a bottom surface 16 which 2 corresponds with the bottom of the channel 22'. underside of the trap 100 is also provided with 3 first and second cut-away portions 19, 21. 4 allows the insect trap 100 to be manufactured from 5 less material than the trap 10 and consequently 6 7 weighs less. The bottom surface 16 may again be placed flush on a surface. The bottom surface 16 8 9 may include an adhesive material or the like, to allow the insect trap 100 to be removably mounted to 10 surfaces such as floors or walls. 11 12 In operation, the insect trap 10,100 is placed in a 13 position where insects and arachnids are likely to 14 be found, such as by windows, doors and skirting 15 boards, for example. With the trap 10,100 in 16 17 position, an insect or arachnid crawls or lands on the sticky substance 24 in the channel 22,22' of the 18 trap 10,100 and becomes trapped. Combined with the 19 effectiveness of the sticky substance 24, the depth 20 of the channel 22 and the smoothed surfaces 18, 20 21 either side do not allow the insect to get any grip 22 with any free legs and thus prevents them from 23 24 removing themselves from the trap 10,100. 25 26 A third preferred embodiment of the trap comprises a thin, substantially flat plastic sheet. 27 The third 28 embodiment differs from the first and second embodiments in that the trap does not have a channel 29 30 member or inclined top surfaces. The sheet is 31 provided with one or more strengthening ribs which 32 are preferably integrally formed with the sheet,

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although they may also be added to the sheet later. 1 2 The ribs can run in any direction on the sheet, but ideally run longitudinally along the sheet in the 3 same manner as that described in the first 4 embodiment. The same sticky substance is applied to 5 6 a portion of the top surface of the plastic sheet as is applied in the first and second embodiments. 7 sheet is preferably transparent to minimise the 8 9 visual impact of the trap. 10 11 Any insects or arachnids walking across or landing on the sticky substance on the sheet will be trapped 12 13 there. The upper surface of the sheet can also be provided with a smooth finish so that an insect 14 15 trapped near the edge of the sticky substance cannot get purchase to extricate itself. When disposing of 16 17 the trap, the strengthening rib(s) ensure that the thin sheet cannot fold back on itself, as 18 conventional flypapers can do. This avoids the user 19 20 potentially coming into contact with a trapped 21 insect or arachnid when disposing of the trap. 22 The insect trap 10,100 may be replaced and disposed 23 of periodically once a number of insects have been 24 25 trapped. If provided in strips, the sticky substance 24 may also be replaced separately from 26 27 the trap 10,100. 28 29 The insect trap of the present invention is provided with a novel composition of sticky substance which 30 31 ensures that insects and arachnids are trapped whilst also ensuring that the viscosity of the 32

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1 material is great enough to avoid any running of the 2 material when the trap is placed on any nonhorizontal surface. The novel composition is also 3 4 such that it counteracts any oil secretions from arachnids in order to ensure that arachnids cannot 5 extricate themselves from the trap once caught. 6 7 addition of a channel and smooth, inclined sides to the trap also further improves the effectiveness of 8 9 the trap. Providing one or more strengthening ribs 10 on the trap also ensures that the trap cannot fold over when being disposed of. As a result, the user 11 is less likely to come into contact with the trapped 12 13 insects or arachnids when disposing of the trap. 14 the trap is provided with a channel, the rib(s) located in the channel can also prevent objects 15 16 inadvertently coming into contact with the sticky substance 24 within the channel 22. 17 18 19 Although the preferred embodiments of the trap are 20 described by themselves, the trap may further 21 comprise attachment means for attaching the trap to 22 other adajacent traps. An example of such an attachment means is a male-female clip arrangement 23 for the traps to be simply clipped together. One 24 end of each trap has a male clip member, whilst the 25 opposite end of the trap has a female member to 26 receive the male clip of an adjacent trap. 27 28 clips can also be adapted to act as a pivot, so that 29 a trap can be folded over on top of an adjacent trap with the sticky surfaces of each trap coming 30 31 together. In this way, disposal of the used traps

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and any trapped insects and arachnids can be made 2 easier for the user. 3 The trap may also be formed in a manner so as to 4 5 allow the traps to fit around corners, possibly by providing traps having one tapered end or else traps 6 7 having an L-shape. Furthermore, the channel does not need to be in the centre of the trap. 8 Instead, it could be located adjacent one edge of the body 9 with the entire top surface inclining upwardly to 10 the channel from the opposite edge of the body. 11 12 Additional ribs may also be provided in the channel, 13 dependent on the length and width of the channel. 14 Finally, although the preferred fixing means for the 15 16 bottom surface of the trap is an adhesive, the 17 plastics material from which the body is made can be of a suitable softness that removable pins, staples 18 19 or nails may be used to fix the trap to a surface. 20 21 These and other modifications and improvements may 22 be made without departing from the scope of the present invention. 23

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Claims:

1 1. An insect and arachnid trap comprising a

- 2 substrate having a top surface and a bottom surface,
- 3 wherein at least a portion of the top surface has a
- 4 sticky substance applied thereto, and wherein the
- 5 substrate has at least one reinforcement rib.

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- 7 2. The trap of Claim 1, wherein the substrate is
- 8 formed from a plastics material and the at least one
- 9 rib is integrally formed with the substrate.

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- 3. The trap of either preceding claim, wherein the
- 12 substrate is an elongate sheet having a longitudinal
- axis, and wherein the at least one rib runs
- substantially parallel to the longitudinal axis.

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- 16 4. The trap of any preceding claim, wherein the
- substrate further includes a channel formed in the
- 18 top surface, and the sticky substance is located in
- 19 the channel.

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- 5. The trap of Claim 4, wherein the at least one rib
- is located in the channel.

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- 24 6. The trap of either Claim 4 or Claim 5, wherein
- the channel is broader at its base than at its top.

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- 7. The trap of any of Claims 4 to 6, wherein the
- channel has a depth of between 1.5 and 2mm.

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1 8. An insect and arachnid trap comprising a

- 2 substrate having a top surface and a bottom surface,
- 3 wherein the substrate has at least one channel
- 4 formed in the top surface, and wherein at least a
- 5 portion of the channel contains a sticky substance.

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- 7 9. The trap of Claim 8, wherein the substrate is an
- 8 elongate sheet having a longitudinal axis, and
- 9 wherein the channel runs substantially parallel to
- 10 the longitudinal axis.

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- 12 10. The trap of either Claim 8 or Claim 9, wherein
- 13 the trap further comprises at least one reinforcing
- 14 rib located in the channel.

15

- 16 11. The trap of Claim 10, wherein the rib is
- integrally formed with the substrate.

18

- 19 12. The trap of Claim 10 or Claim 11, wherein the
- 20 reinforcing rib runs parallel with the channel.

21

- 22 13. The trap of any of Claims 8 to 12, wherein at
- least a portion of the top surface of the substrate
- 24 inclines upwardly from an edge of the substrate to
- 25 the channel.

- 27 14. The trap of any of Claims 8 to 13, wherein the
- channel substantially bisects the top surface of the
- 29 substrate such that the top surface has first and
- 30 second top surface portions, each of the top surface
- 31 portions inclined upwardly from an edge of the
- 32 substrate to the channel.

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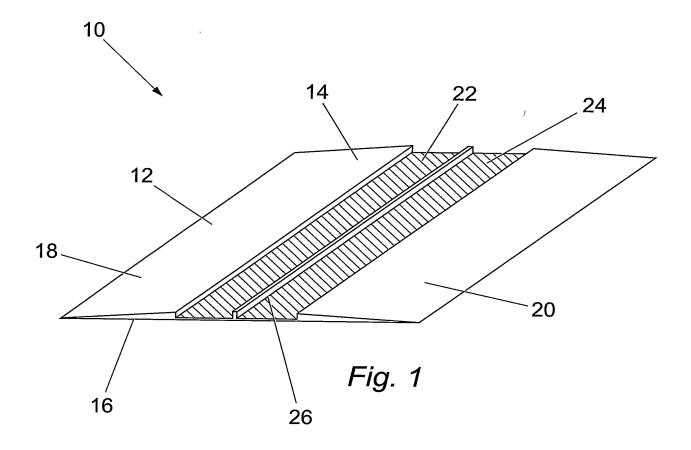
1 15. The trap of any of Claims 8 to 14, wherein the 2 channel is broader at its base than at its top. 3 4 16. The trap of any of Claims 8 to 15, wherein the 5 channel has a depth of between 1.5 and 2mm. 6 7 17. The trap of any preceding claim, wherein the 8 substrate is substantially transparent. 9 10 18. The trap of any preceding claim, wherein the top 11 surface is provided with a substantially smooth 12 finish. 13 14 19. The trap of any preceding claim, wherein the 15 sticky substance is a composition including 16 polybutene oil and polyisobutylene. 17 18 20. The trap of Claim 19, wherein the sticky 19 substance includes between 5 and 15 wt % 20 polyisobutylene. 21 22 21. The trap of any preceding claim, wherein the 23 sticky substance is applied to the substrate in 24 strips. 25 26 22. The trap of any of Claims 1 to 20, wherein the 27 sticky substance is applied to the substrate in 28 fluid form. 29 30

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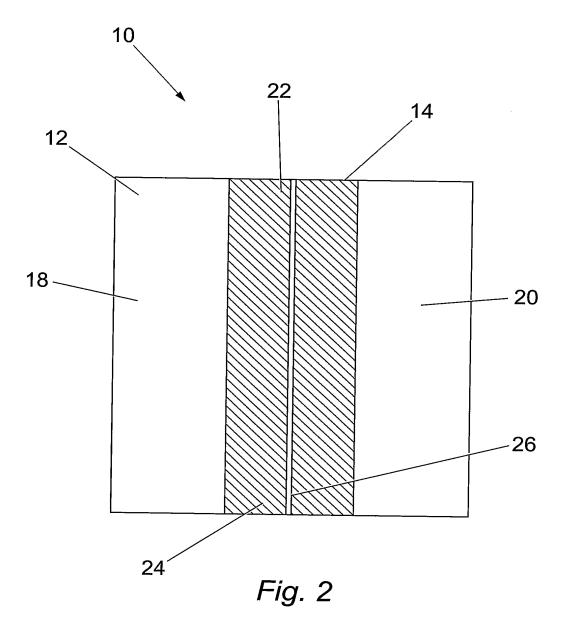
23. The trap of any preceding claim, wherein at 1 least a portion of the bottom surface is coated with an adhesive adapted to secure the trap to a surface. 3 24. The trap of any preceding claim and further 5 comprising mechanical fixing means adapted to fix 6 the trap to an adjacent trap. 7 8 25. The trap of Claim 24, wherein the mechanical 9 fixing means comprises a male fixing element at a 10 first end of the substrate and a female fixing 11 element at a second end of the substrate. 12 13 26. The trap of either Claim 24 or Claim 25, wherein 14 the mechanical fixing means is adapted to permit 15

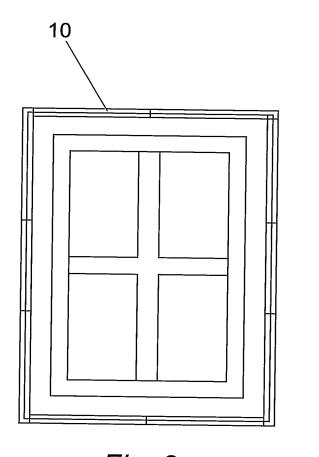
adjacent traps to be folded on top of one another.

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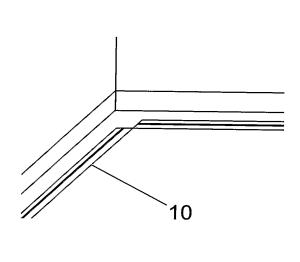
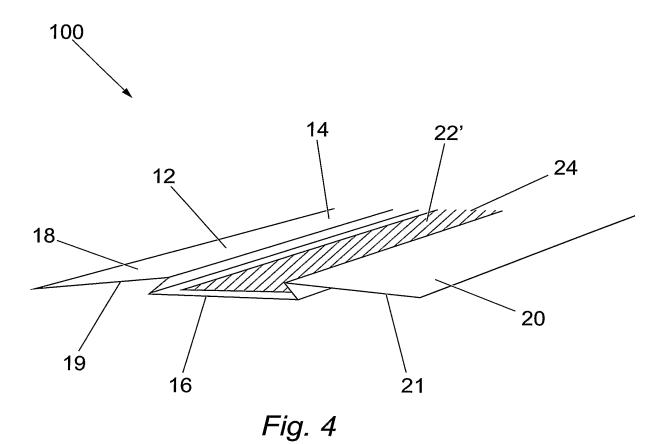
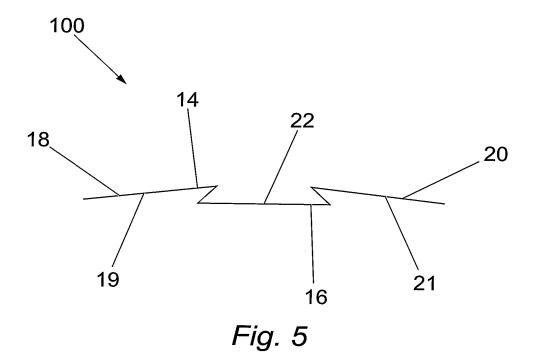


Fig. 3b





PUB-NO: WO2004095919A2

DOCUMENT-IDENTIFIER: WO 2004095919 A2

TITLE: INSECT AND ARACHNID TRAP

PUBN-DATE: November 11, 2004

INVENTOR-INFORMATION:

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APPL-NO: GB2004001757

APPL-DATE: April 26, 2004

PRIORITY-DATA: GB00309572A (April 26, 2003)

INT-CL (IPC): A01M001/14 , A01M001/24

EUR-CL (EPC): A01M001/14 , A01M001/24

ABSTRACT:

CHG DATE=20050122 STATUS=O>An insect and arachnid trap (10, 100) comprises a substrate (12) having a top surface (14) onto which a sticky substance (24) is deposited. One embodiment of the trap (10) is provided with a reinforcing rib (26)

to reinforce the thin sheet substrate. The trap (10, 100) may also have a channel (22, 22′) into which the sticky substance (24) is deposited. The top surface (14) may have a smooth finish and be inclined to the horizontal in order to prevent trapped insects and arachnids from extricating themselves from the sticky substance. The reinforcing rib ensures that the substrate (12) does not fold back upon itself when handled after use. Contact with trapped insects or arachnids is thus avoided.